



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/590,245

08/22/2006

Jun Takada

20166

6746

23389 7590 01/15/2010  
SCULLY SCOTT MURPHY & PRESSER, PC  
400 GARDEN CITY PLAZA  
SUITE 300  
GARDEN CITY, NY 11530

EXAMINER

LIU, LI

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

01/15/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,245	<b>Applicant(s)</b> TAKADA, JUN	
	<b>Examiner</b> LI LIU	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 22-25, 38-41, 46-54, 74, 75, 84 and 85 is/are pending in the application.
- 4a) Of the above claim(s) 22-25, 38-41 and 46-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 50-54, 74, 75, 84, and 85 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment received on 10/22/2009 has been entered and made of record.
2. In view of the amendment to the claims, the cancellation of claims 55-58 and 71-73, amendment to claims 5-8, 53, 74, 75, and 84 are acknowledged.

Claims 1-8, 22-25, 38-41, 46-54, 74, 75, 84, and 85 are now pending, of the above claims 22-25, 38-41, and 46-49 are withdrawn from consideration.

3. Previous objection to claims 5-8 and 53 because of informalities, rejection of claims 1-8, 50-58, 71-75, and 84 on 35 U.S.C. 101 have been overcome in view of applicant's amendments/remarks and are hereby withdrawn.

### ***Examiner's Remarks***

4. Applicant's remarks filed on 10/22/2009 made the Examiner aware to the fact that the amendment to the claims in the PCT filing under Article 34 prior to the present application entering national stage phase was not entered properly, resulting in the Examiner having been examining the wrong set of claims that was before the amendment was made under Article 34 of the PCT. Therefore, this Office Action is made non-final.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2624

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4, 50-52, 74, 75, 84, and 85 are rejected under 35 U.S.C. 102(b) as being anticipated by Sirohey et al. (hereafter referred to as ‘Sirohey’, US 2002/0057844).

Regarding claim 1, Sirohey discloses an encoding device characterized by comprising:

two-dimensional Haar wavelet transforming means (pg. [0077], [0078]) for dividing a two-dimensional signal (**Fig. 15, image data 330**) into subbands (**LL, HL, LH, HH**) as a plurality of frequency regions (**Fig. 15, units 332, 334, 336**);

coefficient extracting means for, whenever said two-dimensional Haar wavelet transforming means transforms a predetermined number (**the number “n” in Figs. 21A, 21B, numeral 538 in up-right corner of Fig. 21B is for decompose LL(n-1)**) of two-dimensional signals (**numerals 418, 462, ... for each decompose level**) into a predetermined number of coefficients (**LL, HL, LH, and HH at each decompose level**), extracting sets of AC-component coefficients of coefficients obtained by transform (**HL, LH, and HH**), for every predetermined number of sets of coefficients which belong to the same spatial position (**Figs. 21A-B, 22A-B, and pg. [0109]-[0110], the tessellated high frequency sub-bands 424, 426 and 428 are identified by HL(n, X, Y), LH(n, X, Y), HH(n, X, Y), while the low frequency sub-band LL(n, X, Y) is passed for further wavelet decomposition. n denotes the decompose level: 1, 2, ....**);

coefficient encoding means for encoding and concatenating the extracted AC-component coefficient sets, and generating a code sequence of a high-frequency subband (**Figs. 21A-B and pg. [0109]-[0110], numerals 446, 490, 532 show code sequence of concatenated AC component coefficient sets for levels 1, 2, 3, respectively**);

initial coefficient encoding means for encoding and concatenating a DC component as a lowest-frequency subband (**LL(n)**), and generating the code sequence of the lowest-frequency subband (**Figs. 21A-B and pg. [0109], numeral 562 in bottom-right of Fig. 21B is the lowest-frequency subband LL(n)**); and

code output means for outputting the code sequence of the lowest-frequency subband, and sequentially outputting the code sequence of the high-frequency subband generated by said coefficient encoding means (**Figs. 21A-B and pg. [0109]-[0110], data stream 404 comprises code sequence of the lowest-frequency subband LL(n), followed by HL(n), LH(n), HH(n), ... HL(1), LH(1), HH(1)**).

Regarding claim 2, Sirohey discloses an encoding device according to claim 1, characterized in that said coefficient extracting means sequentially extracts a predetermined number of coefficient sets at a time in a scan line direction of the two-dimensional signal (**Fig. 21A and pg. [0109], the process 400 stores each spatially equivalent set of high-frequency sub-band blocks, resulting in the 16 data blocks 446 in a scan line direction  $(X, Y) = (0, 0) \rightarrow (0, 1) \rightarrow (0, 2) \rightarrow (0, 3) \rightarrow (1, 0) \rightarrow \dots$**  ).

Art Unit: 2624

Regarding claim 3, Sirohey discloses an encoding device according to claim 1, characterized in that said coefficient extracting means sequentially extracts coefficient sets one by one (**Figs. 21A-B and pg. [0109]-[0110], e.g., numeral 446 indicates that spatially equivalent coefficient sets in decompose level 1 is extracted one by one following the order of  $(X, Y) = (0, 0) \rightarrow (0, 1) \rightarrow (0, 2) \rightarrow (0, 3) \rightarrow (1, 0) \rightarrow \dots$ .**

Regarding claim 4, Sirohey discloses an encoding device characterized by comprising:

element extracting means for sequentially extracting  $2m \times 2$  ( $m$  is an integer:  $m \geq 1$ ) spatially adjacent elements from a two-dimensional signal (**pg. [0078]-[0081], the S-Transform is used to decomposition of the image data**);

two-dimensional Haar wavelet transforming means for dividing the  $2m \times 2$  elements into a plurality of subband coefficient sets (**pg. [0078]-[0081], the S-Transform is Haar wavelet with lifting**);

coefficient encoding means for encoding and concatenating the AC-component coefficient sets obtained by transform by said two-dimensional Haar wavelet transforming means, and generating a code sequence of a high-frequency subband (**Figs. 21A-B, 22A-B, and pg. [0109]-[0110], the tessellated high frequency sub-bands 424, 426 and 428 are identified by  $HL(n, X, Y)$ ,  $LH(n, X, Y)$ ,  $HH(n, X, Y)$ , while the low frequency sub-band  $LL(n, X, Y)$  is passed for further wavelet decomposition.  $n$  denotes the decompose level: 1, 2, ....**);

initial coefficient encoding means for encoding and concatenating a DC component as a lowest-frequency subband (**LL(n)**), and generating the code sequence of the lowest-frequency subband (**Figs. 21A-B and pg. [0109], numeral 562 in Fig. 21B is the lowest-frequency subband LL(n)**); and

code output means for outputting the code sequence of the lowest-frequency subband, and sequentially outputting the code sequence of the high-frequency subband generated by said coefficient encoding means (**Figs. 21A-B and pg. [0109]-[0110], data stream 404 comprises code sequence of the lowest-frequency subband LL(n), followed by HL(n), LH(n), HH(n), ... HL(1), LH(1), HH(1)**).

Regarding device claims 50-52, they are the corresponding decoding device of claims 1-3. Sirohey discloses the decoding device that reverse the encoding procedure to get the original image (**Figs. 24A-B**).

Regarding encoding program claims 74 and 75, the limitations of the claim are rejected for the same reasons as set forth in the rejection of claims 1 and 4 above, respectively.

Regarding decoding program claim 84, which is the corresponding decoding program of claim 50. The limitations of the claim are rejected for the same reasons as set forth in the rejection of claim 50 above.

Regarding claim 85, which combines the limitations of the encoding device of claim 1 with the limitations of decoding device of claim 50, and is therefore rejected for the same reasons as set forth in the rejection of claims 1 and 50 above. Sirohey discloses displaying a received image on the basis of the received image signal (Sirohey, Fig. 25).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 5-8, 53, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sirohey (US 2002/0057844) as applied to claims 1 and 4 above respectively, and further in view of Okada et al. (hereafter referred to as 'Okada', US 7120306).

Regarding claims 5 and 6, Sirohey discloses an encoding device according to claims 1 and 4, respectively, but fails to disclose that each coefficient comprises a plurality of components, which is interpreted as color components such as RGB, YUV, etc.

Okada, in the same field of endeavor, discloses an image coding method wherein each coefficient comprises a plurality of components (**Okada, Fig. 3**,



Art Unit: 2624

**components Y, C<sub>b</sub>, and C<sub>r</sub>), and code is generated by concatenating a code of each component (Okada, Fig. 3, composition of the data stream).**

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Okada with that of Sirohey to yield the invention as described in claims 5 and 6, so that Sirohey's device can be used to code images with multiple components such as RGB or YUV. One of ordinary skill in the art would have recognized that the results of the combination were predictable and the combination enables desired regions of a color image individually handled for storage, transmission, retrieval, and display (Sirohey, abstract).

Regarding claims 7 and 8, Sirohey discloses an encoding device according to claims 1 and 4, respectively, but fails to disclose that each coefficient comprises a plurality of components, which is interpreted as color components such as RGB, YUV, etc.

Okada, in the same field of endeavor, discloses an image coding method wherein each coefficient comprises a plurality of components (**Okada, Fig. 3, components Y, C<sub>b</sub>, and C<sub>r</sub>), and code is generated by concatenating a code of each coefficient (Okada, Fig. 3, quantization and coding of coefficients of each component).**

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Okada with that of Sirohey to yield the invention as described in claims 7 and 8, so that Sirohey's device can be used to code images

Art Unit: 2624

with multiple components such as RGB or YUV. One of ordinary skill in the art would have recognized that the results of the combination were predictable and the combination enables desired regions of a color image individually handled for storage, transmission, retrieval, and display (Sirohey, abstract).

Regarding device claims 53 and 54, it is the corresponding decoding device of claim 5. It would have been obvious to one having ordinary skill in the art at the time the invention was made to reverse the encoding procedure to get the original image. A mere reversal of the coding process is held involving only routine skill in the art.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kato, M.; Matsumura, S.; Takebe, T., "Wavelet image coding using direction and power classified vector quantization". 3rd International Conference on Signal Processing, 1996, Page(s):827 - 830 vol.2

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-5363. The examiner can normally be reached on Monday-Thursday, 7:00AM-4:30PM, ALT. Fridays, EST.

Art Unit: 2624

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed, can be reached on (571)272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

L.L.

/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624